

In claim 51, the Examiner notes the lack of antecedent basis for "first metal layer." Claim 51 has been amended so that this phrase now reads "metal layer," which has antecedent basis.

Applicant therefore respectfully requests withdrawal of the rejection of claims 51 and 52 for lack of antecedent basis.

Claims 50-52, 76 and 77

Claims 50-52, 76, and 77 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In particular, the Examiner asserts that there is no description in the specification, as originally filed, of forming a polysilicon layer over the capacitor dielectric.

Claim 50 has been amended to remove the polysilicon limitation, so that the rejection of claim 50 and claim 51 depending therefrom, is overcome.

Claim 52 includes the limitation of "forming the conductive layer from polysilicon." This limitation is directly supported by the original specification on page 6, last paragraph, which states in part that:

In the preferred embodiment the conductive layer 55 is polysilicon, although metal may be used instead of polysilicon, and more than one material may be used to form conductive layer 55.

This is also clearly illustrated in FIG. 6.

Thus, the specification as originally filed clearly supports the claim limitation of claim 52. Applicant therefore respectfully requests withdrawal of the rejection of claim 52.

With respect to claim 76, the original language in the claim was construed by the Examiner to mean that the polysilicon layer is electrically isolated from the substrate. This was not Applicant's intended meaning. Claim 76 has therefore been amended to clarify that the

polysilicon layer, which is formed over the substrate, has portions that are electrically isolated from one another. This is described in the original specification in the last four lines of page 4.

Accordingly, Applicant respectfully requests that the rejection of claim 76, and claim 77 depending therefrom, be withdrawn.

1.75(c) Objection to Claim 52

Claim 52 was rejected under 37 CFR 1.75(c) as being of improper dependent form, and in particular, for failing to further limit the subject matter of the previous claim, namely claim 50.

Claim 50 has been amended to remove the limitation relating to polysilicon, which is included in claim 52, so that claim 52 now properly limits the subject matter of claim 50. Applicant therefore respectfully requests that the objection to claim 52 be withdrawn.

§103 Rejection of the Claims

Claims 2-6, 10-16, 29-33, 37, and 38

Claims 2-6, 10-16, 29-33, 37, and 38 were rejected under 35 USC § 103(a) as being unpatentable over Gaulier (U.S. Patent No. 4,450,048).

Gaulier discloses forming an aluminum metal layer (5a) to serve as capacitor electrode, and then oxidizing the aluminum layer to form an alumina layer (9) to serve as the dielectric layer for the capacitor. Thus, the oxide formed in Gaulier is limited to alumina because the capacitor electrode is made of aluminum.

Applicant's claimed invention includes a conductive layer, and a metal layer formed over the conductive layer. The oxide is formed by oxidizing at least a portion of the **metal layer** rather than oxidizing the **conductive layer**. Thus, the oxide formed in Applicant's claimed invention is not limited to an oxide of the conductive layer, and is not limited to alumina as taught in Gaulier. This is important because it is often desirable to have the dielectric layer of a capacitor be an oxide of a metal different than the metal making up the capacitor electrodes.

To arrive at Applicant's invention, the Examiner takes official notice "that the anodization of metals... to produce an oxide layer on the metal layer was known prior to

applicant's invention."

It is a fundamental principle of patent law that claimed subject matter must be read *as a whole*. *In re Spinnoble*, 160 USPQ 237, 243 (CCPA 1969). It is therefore improper to establish obviousness by piecing together separate elements of the invention that exist in the prior art, without some teaching or suggestion to combine the elements in the manner claimed. *In re Fritch*, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992); *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 43 USPQ2d 1294, 1296 (Fed. Cir. 1997). Virtually all inventions are made up of known elements or steps, so that using Official Notice to account for elements or steps of an invention without viewing the claimed invention as a whole could be used to render all inventions "obvious."

Applicant respectfully submits that the Examiner has not viewed Applicant's claimed invention as a whole and therefore has misapplied the taking of Official Notice in finding the claimed invention obvious. In the present instance, Applicant's claimed invention differs from the prior art because, among other things, it calls for providing a metal layer over the conductive layer and then oxidizing at least a portion of the metal layer. Prior to Applicant's invention, the oxide separating the capacitor plates was limited to an oxide of one of the plates. With Applicant's invention, different insulating oxides are possible, with different properties than the oxide formed from one of the plates. This results in the ability to create integrated circuit capacitors with improved properties (e.g., higher capacitance).

No prior art reference has been cited that teaches, suggests or motivates this aspect of Applicant's claimed invention. Moreover, it does not follow from the admittedly known principle that metals can be oxidized, that such could be applied by one of ordinary skill in the art to arrive at Applicant's claimed inventions relating to relatively sophisticated semiconductor structures and processes. Applicant's invention solves a problem that is not in any way addressed either by the cited references or by the taking of Judicial Notice relating to the oxidization of metals.

In view of the above, Applicant traverses the obviousness rejection and respectfully requests that the rejection be withdrawn and the claims allowed.

Claims 17 and 18

Claims 17 and 18 were rejected under 35 USC § 103(a) as being unpatentable over Gaulier as applied to claims 2-6, 10-16, 29-33, 37, and 38 above, and further in view of Dickey et al (U.S. Patent No. 4,936,957).

For the same reasons set forth above in connection with Applicant's traversal of the rejection of claims 2-6, 10-16, 29-33, 37, and 38 under 35 USC § 103(a), Applicant traverses the rejection of claims 17 and 18. Dickey et al. provides no teaching, motivation or suggestion to oxidize a metal layer separate from a conductive layer in the formation of an integrated circuit capacitor structure.

Accordingly, Applicant respectfully request the withdrawal of the rejection and allowance of claims 17 and 18.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Joe Gortych, at (802) 660-7199 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit account No. 19-0743.

Respectfully submitted,

KARL M. ROBINSON

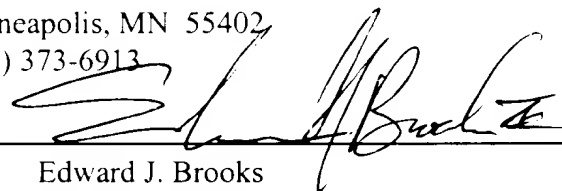
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